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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/705,955

11/13/2003

Masaru Kuribayashi

Q78397

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23373

7590

01/26/2005

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WASHINGTON, DC 20037

EXAMINER

SMITH, TYRONE W

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/705,955

Applicant(s)

KURIBAYASHI ET AL.

Examiner

Tyrone W Smith

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/13/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Obayashi et al (6119247) in view of Grassl et al (5014336).

Regarding Claims 1, 2 and 8-9. Obayashi discloses a drive control apparatus, which includes a rotary machine (Figure 1 item 1000) including a stator having three phase armature winding (Figure 1 item 1110) and a rotor composed of a field winding (Figure 1 item 1230) for magnetizing a plurality of field magnetic poles and permanent magnets for magnetizing the field magnetic poles by interaction with the field winding (Figure s 4A-4B); an electrical power converter (Figure 1 items 200 and Figure 2) which performs as a rectifier when the rotary machine is operated as a generator and performs as an inverter when the rotary machine is operated as a motor; and a control means (Figure 1 item 100) for controlling the electrical power converter (Figure 1 items 200-Inverter), thereby, the rotary machine is operated as a motor. Refer to column 3 lines 1-47. However, Obayashi does not specifically disclose the control means controlling the electrical power converter so as to restrict the armature current at the time of low speed rotation.

Grassl discloses a motor controller, which includes a controller (Figure 1 item 28) controlling the electrical power converter (Figure 1 item 30) so as to restrict the armature current

at the time of low speed rotation or braking, by applying full excitation to the field winding during deceleration. Refer to column 1 lines 50-55 and column 2 lines 8-68 and column 3 lines 1-11.

It would be obvious to one of ordinary skill at the time of invention to use Obayashi's a drive control apparatus with Grassl's motor controller. The advantage of combining the two would provide a system in case of stop, controls the field winding current and not the armature current is applied. Therefore, less expensive switching devices can be applied.

Regarding Claim 3. Grassl discloses field current control means (Figure 1 item 16) is controlled by the control means (Figure 1 item 17) to reduce the field current with increasing rotating speed of the rotary machine. Refer to column 1 lines 50-55 and column 2 lines 8-68 and column 3 lines 1-11.

It would be obvious to one of ordinary skill at the time of invention to use Obayashi's a drive control apparatus with Grassl's motor controller. The advantage of combining the two would provide a system in case of stop controls the field winding current and not the armature current is applied. Therefore, less expensive switching devices can be applied.

Regarding Claims 4-6. Obayashi discloses the rotary machine is operated as a starting motor; the control means (Figure 1 item 100) controls three-phase terminal voltage of the inverter (Figure 1 item 200) in response to the rotating speed (Figure 1 item 1930) of the rotary machine.

It would be obvious to one of ordinary skill at the time of invention to use Obayashi's a drive control apparatus with Grassl's motor controller. The advantage of combining the two would provide a system in case of stop controls the field winding current and not the armature current is applied. Therefore, less expensive switching devices can be applied.

Regarding Claim 7. Regarding claim 7 where the limitation states the armature current at the time of low speed rotation is limited to 300amperes or below. A particular parameter must

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first be recognized as a result-effective variable, i.e., a variable, which achieves a recognized result, before the determination of the optimum or workable ranges of, said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Claim 7 provides a range from 300 amperes or below which can be considered a routine range. Refer the Chapter 2100 section 2144.05 of the M.P.E.P.

It would be obvious to one of ordinary skill at the time of invention to use Obayashi's a drive control apparatus with Grassl's motor controller. The advantage of combining the two would provide a system in case of stop controls the field winding current and not the armature current is applied. Therefore, less expensive switching devices can be applied.

3. Claims 10 and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Obayashi et al (6119247) in view of Grassl et al (5014336) as applied to claims 1-9 above, and further in view of Asao et al (JP11-136913).

Obayashi discloses a drive control apparatus, which includes a rotary machine (Figure 1 item 1000) including a stator having three phase armature winding (Figure 1 item 1110) and a rotor composed of a field winding (Figure 1 item 1230) for magnetizing a plurality of field magnetic poles and permanent magnets for magnetizing the field magnetic poles by interaction with the field winding (Figure s 4A-4B); an electrical power converter (Figure 1 items 200 and Figure 2) which performs as a rectifier when the rotary machine is operated as a generator and performs as an inverter when the rotary machine is operated as a motor; and a control means (Figure 1 item 100) for controlling the electrical power converter (Figure 1 items 200-Inverter), thereby, when said rotary machine is operated as a motor. Refer to column 3 lines 1-47. However, Obayashi does not specifically disclose the control means controlling the electrical power converter so as to restrict the armature current at the time of low speed rotation.

Grassl discloses a motor controller, which includes a controller (Figure 1 item 28) controlling the electrical power converter (Figure 1 item 30) so as to restrict the armature current at the time of low speed rotation or braking, by applying full excitation to the field winding during deceleration. Refer to column 1 lines 50-55 and column 2 lines 8-68 and column 3 lines 1-11. However, neither Obayashi nor Grassl discloses each of the adjacent claw-shaped pole pieces is magnetically shorted by a magnetic bridge element at the periphery of the claw-shaped poles, and the permanent magnets are disposed inside of said bridge elements.

Asao discloses a rotor of rotary electric machines, which includes each of the adjacent claw-shaped pole pieces, is magnetically shorted by a magnetic bridge element at the periphery of the claw-shaped poles, and the permanent magnets are disposed inside of said bridge elements. Refer to the abstract and Figures 1-14.

It would be obvious to one of ordinary skill at the time of invention to use Obayashi's a drive control apparatus with Grassl's motor controller and Asao's a rotor of rotary electric machines. The advantage of combining the two would provide a system that would provide a rotor of rotary electric machine, which can prevent breakdown of a magnet, which is arranged between the pawl type magnetic poles in order to reduce the amount of leakage of magnetic flux between the pawl type magnetic poles.

### **Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior arts related to the motor/generator and synchronous motor is attached in the PTO-892.

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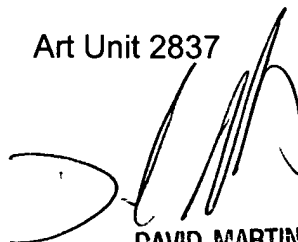
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyrone W Smith whose telephone number is 571-272-2075. The examiner can normally be reached on weekdays from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin, can be reached on 571-272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tyrone Smith  
Patent Examiner

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A handwritten signature in black ink, appearing to be 'DM', is written over a circular stamp.

DAVID MARTIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800